

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BAKER HUGHES OILFIELD OPERATIONS, INC.,
Petitioner,

v.

SMITH INTERNATIONAL, INC.,
Patent Owner.

Case IPR2016-01440
Patent 7,314,099 C1

Before BART A. GERSTENBLITH, JAMES A. TARTAL, and
AMANDA F. WIEKER, *Administrative Patent Judges*.

TARTAL, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
Inter Partes Review
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

Baker Hughes Oilfield Operations, Inc. (“Petitioner”)¹ filed a Petition (Paper 1, “Pet.”) requesting institution of *inter partes* review of claims 1, 2, 4–20, and 28–42 of U.S. Patent No. 7,314,099 C1 (Exs. 1001, 1003 (Ex Parte Reexamination Certificate), collectively, “the ’099 patent”). Smith International, Inc. (“Patent Owner”) filed a Preliminary Response (Paper 9). With our prior authorization (Paper 10), Petitioner filed a Reply to the Preliminary Response (Paper 11), and Patent Owner filed a Sur-Reply (Paper 12).

Pursuant to 35 U.S.C. § 314(a), we determined the Petition showed a reasonable likelihood that Petitioner would prevail in establishing the unpatentability of claims 1, 4, 7, 8, 18, 19, 31–37, and 39–42 (the “instituted claims”), and instituted *inter partes* review of these claims on certain asserted grounds of unpatentability. Paper 13 (“Inst. Dec.”). We, however, did not institute review of claims 2, 9, 10, 13–17, 28–30, and 38 on an additional asserted ground of unpatentability, because we determined Petitioner had not shown sufficiently that one of the asserted references relied upon for that ground was available as prior art in this proceeding and, as a result, the Petition did not show a reasonable likelihood that Petitioner would prevail with respect to these claims. *Id.* at 16–18. We also declined to institute review of claims 2, 5, 6, 9–17, 20, 28, and 29 on another ground of unpatentability, because we determined that, with respect to that ground and these claims, Petitioner asserted the same or substantially the same prior

¹ On July 14, 2017, Petitioner filed an updated notice to identify the following as real parties-in-interest to this proceeding: Baker Hughes Oilfield Operations LLC; Baker Hughes, a GE company, LLC; Baker Hughes, a GE company; and General Electric Company. Paper 20.

art or arguments that Petitioner previously presented to the Office in the reexamination of the '099 patent. *Id.* at 18–20; *see also* 35 U.S.C. § 325(d) (“In determining whether to institute or order a proceeding . . . , the Director may take into account whether, and reject the petition or request because, the same or substantially the same prior art or arguments previously were presented to the Office.”).

After institution, Patent Owner filed a Patent Owner Response. Paper 18 (“PO Resp.”). Petitioner filed a Reply to Patent Owner’s Response. Paper 22 (“Pet. Reply”).

Oral argument was held before the Board on October 25, 2017, jointly in this case and in Case IPR2016-01452 in which Petitioner filed a petition challenging claims 22–27 and 43–57 of the '099 patent. Paper 30 (“Tr.”); *see also* Pet. 3.

We issue this Final Written Decision pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. Having considered the record before us, we determine Petitioner has not shown by a preponderance of the evidence that any of the instituted claims of the '099 patent are unpatentable. *See* 35 U.S.C. § 316(e).

II. BACKGROUND

A. ADDITIONAL RELATED PROCEEDINGS

The parties indicate that the '099 patent is asserted in the United States District Court for the District of Delaware, in a case captioned *Smith Int’l, Inc. v. Baker Hughes Inc.*, No. 1:16-cv-00056 (D. Del.). Pet. 5; Paper 5, 2. Additionally, an appeal of *Ex Parte* Reexamination Number 90/012,912 pertaining to U.S. Patent No. 6,732,817, a parent of the application that issued as the '099 patent, was pending before the U.S. Court

of Appeals for the Federal Circuit when this proceeding was instituted. Prior to oral argument in this proceeding, the Federal Circuit reversed the rejections of all of the appealed claims at issue in that case. *In re Smith Int'l, Inc.*, 871 F.3d 1375 (Fed. Cir. 2017).

B. THE '099 PATENT

The '099 patent is titled “Selectively Actuatable Expandable Underreamer/Stabilizer” and issued January 1, 2008, from U.S. Application No. 11/436,790, filed May 18, 2006. Ex. 1001. In 2013, Baker Hughes Incorporated requested an *ex parte* reexamination of claims 1–15 and 18–27 of the '099 patent based on seven references. Pet. 3; Ex. 1012, 102–03. An Ex Parte Reexamination Certificate for the '099 patent issued on December 16, 2014, canceling claim 21, confirming the patentability of claims 22–26, determining patentable claims 1 and 27 as amended, determining patentable claims 2–20 dependent on an amended claim, and determining patentable added claims 28–57. Ex. 1003, 1:17–25. During reexamination of the '099 patent, claim 1 was amended to require “the at least one moveable arm translates axially and radially” to overcome the prior art of record. Pet. 10–12 (citing Ex. 1012, 8, 12).

The '099 patent generally relates to “underreamers for enlarging a borehole below a restriction to result in a borehole that is larger than the restriction” and “stabilizers for stabilizing a drilling assembly within an underreamed portion of borehole.” Ex. 1001, 1:25–30. In particular, the '099 patent describes “a selectively actuatable, expandable downhole tool that may function as an underreamer, or as a stabilizer, or as a combination thereof.” *Id.* at 1:30–33. According to the '099 patent, underreamers have two operative states: “a closed or collapsed state, where the diameter of the

tool is sufficiently small to allow the tool to pass through the existing cased borehole, and an open or partly expanded state, where one or more arms with cutters on the ends thereof extend from the body of the tool.” *Id.* at 1:58–63. “In this latter position, the underreamer enlarges the borehole diameter as the tool is rotated and lowered in the borehole. *Id.* at 1:63–65.

More particularly, the '099 patent describes “an expandable downhole tool for use within a wellbore comprising a tubular body having an axial flowbore extending there through, at least one moveable arm, and a selectively actuatable sleeve that prevents or allows the at least one moveable arm to translate between a collapsed position and an expanded position.” *Id.* at 4:66–5:5. Figures 4 and 5 of the '099 patent are reproduced below, with color shading that replicates the annotated version of the figures provided by Petitioner. *See* Pet. 1.

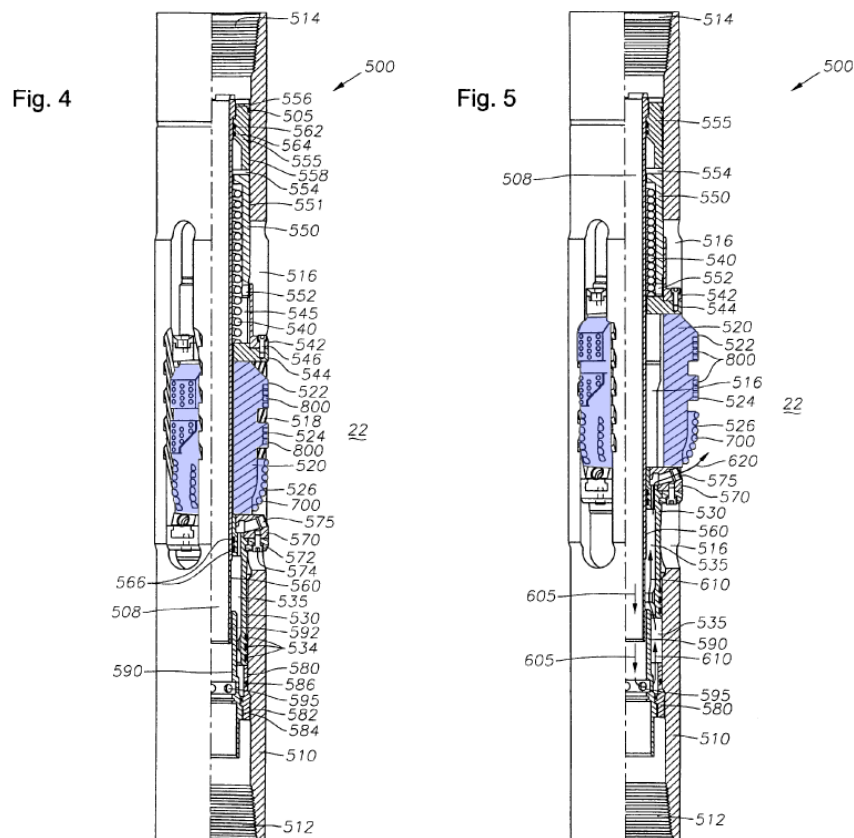


Figure 4 illustrates “a cross-sectional elevation view of one embodiment of the expandable tool . . . , showing [in blue] the moveable arms [520] in the collapsed position,” and Figure 5 illustrates “a cross-sectional elevation view of the expandable tool of FIG. 4, showing [in blue] the moveable arms [520] in the expanded position.” *Id.* at 6:44–49. Expandable tool 500 includes “a generally cylindrical tool body 510 with a flowbore 508 extending therethrough.” *Id.* at 8:60–62. Pocket recesses 516 in body 510 accommodate the axial movement of several components including “moveable, non-pivotable tool arms 520.” *Id.* at 8:64–9:4. “Each recess 516 stores one moveable arm 520 in the collapsed position.” *Id.* at 9:4–5. “[R]ecesses 516 further include angled channels 518 that provide a drive mechanism for the moveable tool arms 520 to move axially upwardly and radially outwardly into the expanded position of FIG. 5.” *Id.* at 9:14–17.

“The drilling fluid flows along path 605, through ports 595 in the lower retainer 590, along path 610 into the piston chamber 535.” *Id.* at 10:35–37. “The differential pressure between the fluid in the flowbore 508 and the fluid in the borehole annulus 22 surrounding tool 500 causes the piston 530 to move axially upwardly from the position shown in FIG. 4 to the position shown in FIG. 5.” *Id.* at 10:37–41. “As the piston 530 moves axially upwardly in pocket recesses 516, the piston 530 engages the drive ring 570, thereby causing the drive ring 570 to move axially upwardly against the moveable arms 520.” *Id.* at 10:43–47. The ’099 patent further explains that “[t]he arms 520 will move axially upwardly in pocket recesses 516 and also radially outwardly as the arms 520 travel in channels 518 disposed in the body 510.” *Id.* at 10:47–49. “In the expanded position, the

flow continues along paths 605, 610 and out into the annulus 22 through nozzles 575.” *Id.* at 10:49–51.

“The moveable arms 520 include pads 522, 524, and 526 with structures 700, 800 that engage the borehole when the arms 520 are expanded outwardly to the expanded position of the tool 500 shown in FIG. 5.” *Id.* at 9:52–55. “In the expanded position shown in FIG. 5, the arms 520 will either underream the borehole or stabilize the drilling assembly, depending upon how the pads 522, 524 and 526 are configured.” *Id.* at 10:25–28.

C. ILLUSTRATIVE CLAIM

Instituted claim 1 is independent and claims 4, 7, 8, 18, 19, 31–37, and 39–42 depend from claim 1. Claim 1 is illustrative of the claimed subject matter and is reproduced below:

1. An expandable downhole tool for use within a wellbore, comprising:
 - a tubular body having an axial flowbore extending there-through;
 - at least one moveable arm;
 - and a selectively actuatable sleeve that prevents or allows a differential pressure to translate the at least one moveable arm between a collapsed position and an expanded position, *wherein the at least one moveable arm translates axially and radially.*

Ex. 1003, 1:26–35 (emphasis in original indicating subject matter added by amendment).

D. INSTITUTED GROUNDS OF UNPATENTABILITY

We instituted *inter partes* review of claims 1, 4, 7, 8, 18, 19, 31–37, and 39–42 of the '099 patent on the following grounds of unpatentability asserted in the Petition. Inst. Dec. 21.

Reference(s)	Basis	Claims
Myers ²	§ 102(b)	1, 7, 8, 18, 19, 31–37, and 39–42 ³
Myers and Bostock ⁴	§ 103(a)	4, 33, and 34

Petitioner supports its challenge with a Declaration by Leslie T. Shale, dated July 15, 2016 (Ex. 1010). Patent Owner relies on a Declaration by Lance D. Underwood dated May 22, 2017 (Ex. 2018).

III. ANALYSIS

A. CLAIM CONSTRUCTION

We interpret claims of an unexpired patent using the broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b). We presume a claim term carries its “ordinary and customary meaning,” which is “the meaning that the term would have to a person of ordinary skill in the art in question” at the time of the invention. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007) (citation and quotations omitted). This presumption, however, is rebutted when the patentee acts as his own lexicographer by giving the term a particular meaning in the specification with “reasonable clarity,

² U.S. Patent No. 3,136,364, issued June 9, 1964 (Ex. 1004, “Myers”).

³ Petitioner did not contend in the Petition that claims 1, 7, 8, 18, 19, 31–37, and 39–42 of the '099 patent would have been obvious over either Myers, alone or in combination with Bostock. Accordingly, our consideration in this case is limited to anticipation of these claims by Myers, which is the ground upon which we instituted *inter partes* review. See Inst. Dec. 21.

⁴ U.S. Patent No. 3,237,695, issued March 1, 1966 (Ex. 1005, “Bostock”).

deliberateness, and precision.” *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

Petitioner and Patent Owner address the construction of a number of claim terms. Pet. 12–16; PO Resp. 3–21; Pet. Reply 9 n.2, 20–21. We address terms only to the extent necessary to resolve the parties’ disputes regarding the pending grounds of unpatentability. *See Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.”).

“translates axially and radially”

Claim 1 recites “*wherein the at least one moveable arm translates axially and radially.*” Ex. 1003, 1:34–35. With regard to the term “translates,” Petitioner contends that it refers to movement “linearly as opposed to rotationally.” Pet. 17; *see also id.* at 12 (stating that during reexamination amended claim 1 overcame the prior art of record at that time “which illustrated expandable blades that ‘only rotate about pivots,’ and do not, therefore, ‘translate’”) (quoting Ex. 1012, 8). Patent Owner does not propose an alternative construction for “translates” and does not otherwise contest Petitioner’s contentions with respect to the term.

Petitioner did not propose an express construction for “axially” or “radially” in the Petition. In its Reply, Petitioner equates “radially” to “outwardly” and “axially” to “downwardly.” Pet. Reply 7. Patent Owner contends that “axially and radially” would have been understood by a person of ordinary skill in the art “to refer to movement relative the body and oriented relative to the axis of the body.” PO Resp. 19 (citing Ex. 2018 ¶ 82). In particular, Patent Owner contends that “axial” refers to “movement

along or parallel to the axis of the body, and that “radial” refers to “the direction perpendicular to the axis of the body.” PO Resp. 20. Patent Owner contends its interpretation is consistent with the Specification of the ’099 patent and is supported by both its expert, Mr. Underwood, and Petitioner’s expert, Mr. Shale. *Id.* at 18–21 (citations omitted). For example, Mr. Shale testified that “[r]adially’ basically means left to right within the tubular body,” and “‘axially’ means up and down within the tubular body.” Ex. 2021, 189:5–7. Patent Owner further notes that Figures 4, 5, 11, and 12 of the ’099 patent illustrate arms 520 moving axially and radially relative to body 510. PO Resp. 20.

In its Reply, Petitioner argues that “[c]ontrary to Patent Owner’s assertion, claim 1 of the ’099 [p]atent does not require that the body 10 be the frame of reference for the axial and radial movement.” Pet. Reply 13 n.3. Petitioner, however, cites no persuasive evidence to counter Patent Owner’s proposed construction. Contrary to Petitioner’s assertion, Mr. Shale agreed that “radially” corresponds to “outward from the body,” and that “axially” corresponds to “up and down of the body.” Ex. 2021 190:4–19. Consistent with Mr. Shale’s testimony, Petitioner’s analysis purports to show that Myers discloses movement of moveable arms (slips 30) “both axially and radially relative to the body 10 [of Myers].” Pet. 19–20. Petitioner is not alleging movement of the slips of Myers relative to a feature other than the body of Myers or in some other frame of reference. *See* Tr. 10:1–21. Thus, based on the evidence discussed above, we determine “*translates axially and radially*,” as recited in claim 1, means “moves parallel to and perpendicular to the body” and does not encompass movement consisting of only rotation about a pivot point.

B. ASSERTED ANTICIPATION BY MYERS

We instituted review on Petitioner’s assertion that Myers anticipates claims 1, 7, 8, 18, 19, 31–37, and 39–42 of the ’099 patent. Inst. Dec. 21; *see also* Pet. 16–24. Anticipation under 35 U.S.C. § 102 requires “the presence in a single prior art disclosure of all elements of a claimed invention arranged as in the claim.” *Therasense, Inc. v. Becton, Dickinson & Co.*, 593 F.3d 1325, 1332 (Fed. Cir. 2010). Specifically, “[f]or a claim to be anticipated, each claim element must be disclosed, either expressly or inherently, in a single prior art reference, and the claimed arrangement or combination of those elements must also be disclosed, either expressly or inherently, in that same prior art reference.” *Id.* at 1332–33. Inherent disclosure is established where the reference “must necessarily include the unstated limitation.” *Id.* (emphasis omitted); *see Cont’l Can Co. USA v. Monsanto Co.*, 948 F.2d 1264, 1268 (Fed. Cir. 1991) (holding that inherency can be established by extrinsic evidence that “make[s] clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill”).

Upon consideration of the Petition, Patent Owner’s Response, Petitioner’s Reply, and the supporting evidence, for the reasons that follow, we conclude that Petitioner has not shown by a preponderance of the evidence that Myers anticipates any of the instituted claims. The focus of our discussion is on whether Petitioner has shown sufficiently that Myers discloses “*at least one moveable arm translates axially*,” as required by claim 1, because resolution of that issue is dispositive in this case.

1. Summary of the Disclosure of Myers

Myers is titled “Hydraulically Set Well Packer” and relates to well tools “adapted to be lowered and set in conduit strings, such as well casing, disposed in well bores.” Ex. 1004, 1:2–12. As explained by Petitioner, “Myers describes an expandable downhole tool in the form of a hydraulically set well packer for use within a wellbore.” Pet. 16–17.

Figures 2 and 3 of Myers are reproduced below, with color shading that replicates the annotated version of the figures provided by Patent Owner. See PO Resp. 28–29.

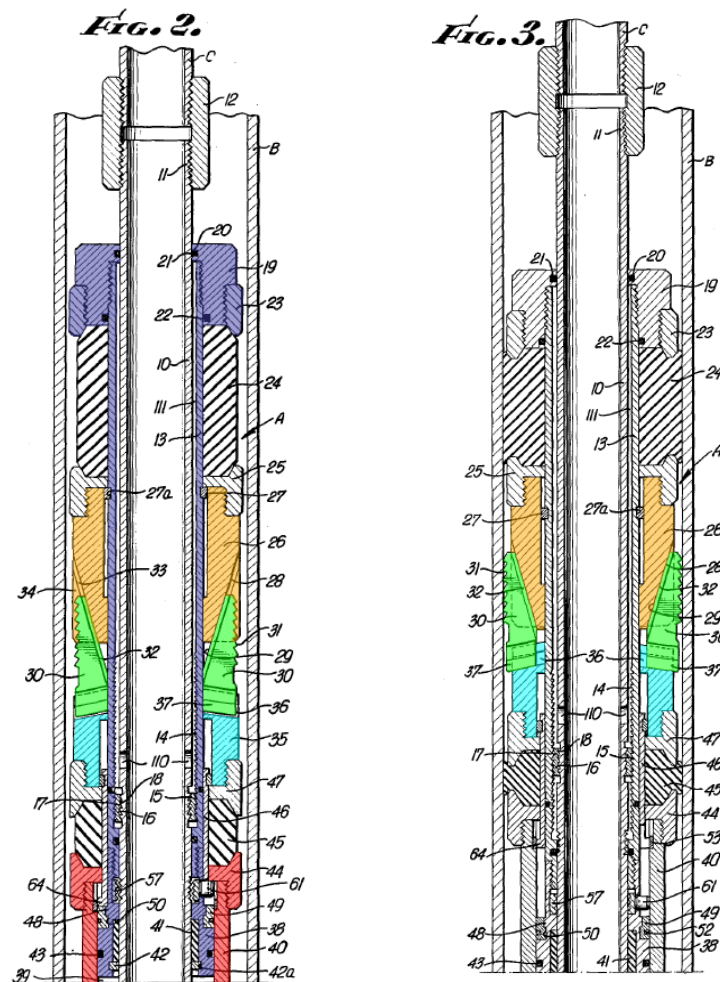


Figure 2 illustrates a longitudinal section of the well packer embodying the invention of Myers conditioned to be set hydraulically in the well casing.

Ex. 1004, 1:60–62. Figure 3 illustrates a longitudinal section corresponding to Figure 2 of the well packer and embodying the invention anchored in packed-off condition in the well casing. *Id.* at 1:64–66.

Figures 2a and 3a of Myers are reproduced below, with color shading that replicates the annotated version of Figure 2a provided by Patent Owner. See PO Resp. 29.

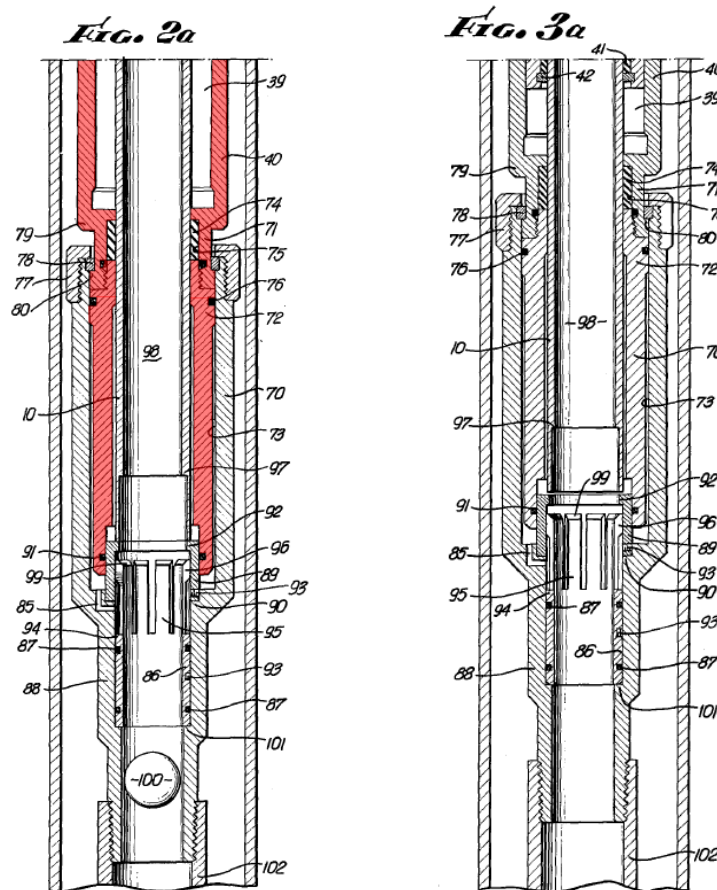


Figure 2a is a continuation of Figure 2 and illustrates a longitudinal section of the well packer embodying the invention conditioned to be set hydraulically in the well casing. Ex. 1004, 1:60–63. Figure 3a is a continuation of Figure 3 and illustrates a longitudinal section corresponding to Figure 2a of the well packer and embodying the invention anchored in packed-off condition in the well casing. *Id.* at 1:64–67. Figure 2 should be

envisioned as stacked above Figure 2a, and, likewise, Figure 3 should be envisioned as stacked above Figure 3a. See Pet. Reply 3.

Figures 2, 2a, 3, and 3a show elements of well tool A, described as a “packer,” that may be lowered in well casing B on tubular string C (“such as a string of tubing or drill pipe”) to a desired location “to be anchored in packed-off condition against the wall of the well casing.” Ex. 1004, 2:5–9.

The well packer, among various components, includes:

central tubular mandrel or body 10	upper annular abutment 47
upper setting sleeve 13	shear ring 53
upper abutment 19	split lock ring 57
abutment gauge ring 23	internal groove 58
packing structure 24	lock pin 61
lower annular abutment 25	bore 62
slip expander 26	cylinder 70
slips 30	lower annular piston 72
external wickers or teeth 31	clamp ring 77
side tongues 32	two-piece stop or limit ring 78
grooves 33	stop flange 80
slots 34	inlet port 85
slip ring 35	valve sleeve 86
T-shaped slots 36	stop sleeve 89
T-shaped heads 37	shoulder 90
upper annular piston 38	shear screw 93
lower setting sleeve or cylinder 40	passage 98
lower annular abutment or holding member 44	valve seat 99
elastic anchor sleeve 45	valve element or ball 100

Id. at 2:13–5:17.

2. *Analysis of Petitioner's Anticipation Contentions Based on Myers*

Petitioner identifies slips 30 of Myers (shown in green in Figures 2 and 3 above) as corresponding to the “moveable arm” of claim 1. Pet. 20. “The setting of the slips 30 and packing 24 is secured hydraulically, and actually by the hydrostatic head of fluid in the well bore or casing B.” Ex. 1004, 4:11–13. The central issue in this case is whether Petitioner has established by a preponderance of the evidence that slips 30 translate axially relative to body 10, as required by claim 1. Myers does not unambiguously state whether slips 30 move axially during their deployment, but does state that slips 30 are “prevented from moving downwardly.” Ex. 1004, 6:17–18. We therefore focus our discussion on how the parties contend Myers operates to determine whether Petitioner has shown sufficiently that Myers discloses the recited axial movement.

Petitioner describes at length how it contends the well packer described by Myers operates. Pet. 17–20; Pet. Reply 1–15. Patent Owner also details its contentions about the operation of Myers. PO Resp. 21–42. We approach the issue by addressing the sequence of steps Myers discloses with respect to the deployment of slips 30 as set forth primarily in the Petition. Each of the elements discussed below is shown in at least one of Figures 2, 2a, 3, or 3a of Myers unless otherwise noted.

1. “[S]lips 30 are initially held in a collapsed position by tongue-in-groove engagement with expanders 26 [shown in yellow in Figures 2 and 3 above].” Pet. 18 (citing Ex. 1004, 2:68–3:9).
2. “[E]xpanders 26 are coupled to an upper setting sleeve 13 through a lower annular abutment 25, packing structure 24, and upper annular abutment 19.” *Id.* (citing Ex. 1004, 2:50–67).

3. “[U]pper setting sleeve 13 is initially prevented from moving axially relative to the body 10 ‘by virtue of a split lock ring 57 disposed in an internal groove 58 [illustrated in Figure 5 of Myers] provided by and between the piston 38 and the lower end of the setting sleeve 13,’ and the split lock ring 57 is held in the locked position ‘with a lock pin 61 mounted in a bore 62 [illustrated in Myers Figure 5] of the piston 38.’” *Id.* (quoting Ex. 1004, 3:60–74.)
4. Piston 38 “is held in position relative to a lower setting sleeve 40 by a shear ring 53.” Pet. 18–19 (citing Ex. 1004, 3:42–50).
5. “With all of the parts coupled together to prevent relative movement, well packer A is lowered in the well casing B by means of the tubular string C to the desired setting point.” Ex. 1004, 5:43–47.
6. To deploy the slips at a desired location, ball 100 is dropped into tubular string C “and will gravitate downwardly therethrough” until reaching seat 99 of valve sleeve 86 (illustrated in Myers, Figure 1a). Pet. at 19 (citing Ex. 1004, 5:47–52).
7. “Sufficient pressure is then imposed on the fluid in the tubular string C and the body 10 of the tool to shear the screw 93.” Ex. 1004, 5:52–54. “Fluid pressure acts against the ball 100 seated against the seat 99, shears a shear screw 93, and shifts the valve sleeve 86 axially downward ‘from its closed position across the inlet port 85’ to an open position.” Pet. 19 (quoting Ex. 1004, 5:55–59). “The hydrostatic head of fluid in the tubular string C

can now enter the inlet port 85 and act in an upward direction on the lower piston 72.” Ex. 1004, 5:57–59.

8. “Upward movement of the lower piston 72 ‘carries the lower setting sleeve 40’ upwardly and shears the shear ring 53.” Pet. 19 (quoting Ex. 1004, 5:57–69).
9. “The movement of the lower setting sleeve 40 upwardly releases the pin 61, and ‘the lock ring 57 can then expand outwardly’ to free ‘the piston 38 and the upper setting sleeve 13 for downward movement along the body.’” *Id.* (quoting Ex. 1004, 5:69–75).
10. “When the piston 38 is free to move, fluid pressure within the tool bore ‘can act downwardly on the upper piston 38,’ which ‘pulls the upper setting sleeve 13 downwardly with it . . . , moving the upper abutment 19 secured to it, the packing sleeve 24, and the expander 26 downwardly with it.’” *Id.* (quoting Ex. 1004, 6:6–17).
11. Slips 30 are “prevented from moving downwardly by the fact that the slip ring 35 [shown in blue in Figures 2 and 3 above] and abutment 47 are resting upon the elastic anchor sleeve 45, which, in turn, bears against the lower abutment 44 secured to the lower setting sleeve 40.” Ex. 1004, 6:17–21.
12. “The expander 26 ‘moves longitudinally downwardly along the slips 30, shifting them outwardly and embedding their wickers or teeth 31 in the wall of the well casing B.’” Pet. 19–20 (quoting Ex. 1004, 6:21–24).

The steps discussed above address how slips 30 of Myers are deployed, but do not explain expressly whether slips 30 move axially relative to body 10 during deployment. With regard to the slips, Myers further provides that:

[Slips 30] are positively movable laterally relative to the expander upon relative longitudinal movement between the expander and slips by inclined spline connections between the slips and expander, provided by oppositely directed side tongues 32 on each slip sliding in companion grooves 33 in the expander on opposite sides of slots 34 in the expander in which the slips are disposed. The lower ends of the slips 30 are coupled for movement longitudinally with one another by being connected to a slip ring 35 having generally T-shaped slots 36 therein receiving companion T-shaped heads 37 on the lower portions of the slips. Thus, the slips 30 move longitudinally jointly with the slip ring 35, although they are still permitted to move radially or laterally inwardly and outwardly of the slip ring, upon relative longitudinal movement between the slips 30 and expander 26.

Ex. 1004, 3:2–17. In this passage, the movement of the slips includes “longitudinal movement,” which we understand generally corresponds to a vertical direction, as opposed to lateral movement in a horizontal direction. However, the movement is described relative to expander 26, not relative to body 10. See Pet. 13 (using “lateral” consistent with the horizontal extent and “longitudinal” consistent with the vertical extent). Thus, this passage also does not explain expressly whether slips 30 move axially relative to the body during deployment.

Beyond a general overview of the operation of Myers, as discussed above, the Petition provides virtually no explanation to further support the contention that slips 30 move axially other than to cite to the portion of Myers quoted above discussing movement of the slips relative to expander 26. See Pet. 20–21 (stating “slips 30 move both axially and radially relative

to the body 10, along ‘generally T-shaped slots 36’ that are linear and angled relative to the axial direction”) (citing Ex. 1004, 3:9–17; Fig. 1) and that “slips 30 translate along angled generally T-shaped slots 36” (citing *Id.* at Fig. 1, 3). We recognize that slip ring 35 having generally T-shaped slots 36 is angled, and that if it were kept stationary, slips 30 would descend in an axial direction when translated radially by the downward movement of expander 26. However, as established during the course of this proceeding, setting sleeve 40 is beneath slip ring 35, and setting sleeve 40 moves upwardly during deployment of slips 30. Ex. 1004, 5:57–75. Thus, the fact that slip ring 35 having generally T-shaped slots 36 is angled does not, alone, establish that slips 30 move axially relative to body 10 in light of the upward movement of setting sleeve 40.

We next consider the declaration of Mr. Shale to determine whether it further supports the contention that slips 30 of Myers move axially relative to body 10. Mr. Shale’s declaration discusses the operation of Myers in a manner that is virtually identical in substance to the content of the Petition. *Compare* Ex. 1010 ¶¶ 49–53, *with* Pet. 16–20. Mr. Shale, however, does not address expressly each limitation of the instituted claims or provide an express comparison of those claim elements to Myers.⁵ To the extent

⁵ During his deposition Mr. Shale was asked whether he had any opinion of whether any claim of the ’099 patent is anticipated by any prior art and responded: “I’ve got no idea what you’re talking about.” Ex. 2020, 75:1–2. More important than Mr. Shale’s understanding of the term “anticipation” is his opinion on whether Myers discloses all elements of the instituted claims, arranged as in the claims, and we find his declaration does not address this issue expressly. *See* Ex. 1010; *see also* Resp. 41 (noting that Mr. Shale’s declaration omits any mapping of the claim elements to the features of Myers).

Mr. Shale expresses the opinion that “slips 30 move both axially and radially relative to the body 10, along ‘generally T-shaped slots 36’ that are linear and angled relative to the axial direction,” we find that testimony to be conclusory and entitled to little weight, in part because this testimony does not account for the upward movement of setting sleeve 40. *See* Ex. 1010 ¶ 53 (quoting Ex. 1004, 3:11); *see also In re Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1368 (Fed. Cir. 2004) (“[T]he Board is entitled to weigh the declarations and conclude that the lack of factual corroboration warrants discounting the opinions expressed in the declarations.”); 37 C.F.R. § 42.65(a) (“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”). Accordingly, we find Mr. Shale’s declaration fails to provide persuasive support for Petitioner’s contention that Myers discloses “*one moveable arm translates axially and radially*,” as required by claim 1, beyond what Myers, itself, discloses.

We find more persuasive Mr. Underwood’s testimony, on behalf of Patent Owner, that Myers fails to disclose axial movement of slips 30. Ex. 2018 ¶¶ 90–107. According to Mr. Underwood:

slots [36 of Myers] are shown as angled relative to the slip ring 35. However, though the slips may move downward (axially) relative to the slip ring 35 as the slips move outward (radially), the slip ring 35 at the same time moves upward (axially) relative to the body. As such, the angle of the slots 36 within the slip ring 35 is not, itself, indicative of the overall movement of the slips.

Id. ¶ 91. Mr. Underwood further reasons that “as the slip ring moves upwardly, the movement of the slips relative to the body in the axial direction is zero due to the slips sliding downward in the slots 36 relative to the slip ring 35 in equal proportion.” *Id.* ¶ 94. Mr. Underwood also

suggests that a benefit of such operation would be to permit a well packer “to lock against a well casing without dragging against the surface of the casing.” *Id.* ¶ 100.

In Patent Owner’s annotated Figures 2 and 2a, replicated above, Patent Owner identifies an assembly of components in red as “Assembly A” and a separate assembly of components in purple as “Assembly B.” Ex. 2018 ¶ 102. Mr. Underwood states that slip ring 35 is driven upward by Assembly A and that expander 26 is driven downward by Assembly B. *Id.* Mr. Underwood states that “when the anchor sleeve 45 of Assembly A engages the upper abutment 47 [by closing the gap shown in Figure 1 between anchor sleeve 45 and upper abutment 47] Assembly B is simultaneously released for downward movement, such that the motion of the expander 26 and slip ring 35 occurs simultaneously.” *Id.* ¶ 104. From the foregoing, it is Mr. Underwood’s opinion that “the axial movement of the slips relative to the body is zero and the only disclosed movement of the slips relative to the body is radial.” *Id.* ¶ 107.⁶

⁶ Mr. Underwood also provides annotated Figures 1–3 of Myers that purport to show slips 30 displaced “in the radial direction while not moving at all in the axial direction.” Ex. 2018 ¶ 111; *see also id.* ¶¶ 109, 110, 114. In Reply, Petitioner notes that Mr. Underwood conceded that the figures in Myers are not drawn “fully, accurately or to scale,” and that body 10 appears to have a different length in Figure 3 than it does in Figures 1 or 2. Pet. Reply 16 (quoting Ex. 1021 57:21–58:1). We agree with Petitioner that Mr. Underwood has not shown sufficiently a basis to rely on a comparison of the location of elements in Figures 1–3 admittedly not drawn to scale and, therefore, we do not credit this testimony in reaching our Decision. *See Hockerson-Halberstadt, Inc. v. Avia Grp. Int’l, Inc.*, 222 F.3d 951, 956 (Fed. Cir. 2000) (“[I]t is well established that patent drawings do not define the precise proportions of the elements and may not be relied on to show particular sizes if the specification is completely silent on the issue.”).

In its Reply, Petitioner contends that Patent Owner and Mr. Underwood erroneously interpret Myers. Pet. Reply 1. Petitioner notes that “[a] correct understanding of the operation of the Myers tool is essential to discern whether Myers anticipates the claims of the ’099 Patent” and recognizes that “Myers is a complicated reference.” *Id.* Significantly, however, Petitioner’s Reply is unsupported by any additional declaration testimony from Mr. Shale or any other expert in the field. As noted above, Mr. Shale’s sole declaration in this case fails to provide persuasive support for Petitioner’s contention that Myers discloses “*one moveable arm [that] translates axially and radially,*” as required by claim 1. Thus, in Petitioner’s attempt to show by a preponderance of the evidence that Myers anticipates claim 1, we are left primarily with counsel’s arguments on behalf of Petitioner and the deposition testimony of Mr. Shale and Mr. Underwood. In its Reply, however, Petitioner also fails to identify support from Mr. Shale’s deposition for the proposition that slips 30 of Myers translate axially, as required by claim 1. *See* Pet. Reply 1–17. Petitioner instead focuses on Mr. Underwood’s testimony.

In its Reply, Petitioner argues for the first time that in Myers the transition from the position shown in Figures 2 and 2a to Figures 3 and 3a “includes two sequential phases of movement.” Pet. Reply 2. In sum, Petitioner contends that Assembly A cannot move upward relative to body 10 after lower setting sleeve 40 engages stop ring 78, but that Assembly B can and does continue to move downward translating slips 30 axially and radially until anchored in the casing. *Id.* at 2–6.

There is support for Petitioner's contention in Myers, which states:

The lower piston 72 cannot move upwardly in the cylinder 70 to any further extent, the flange 80 engages the stop ring 78, nor can the lower cylinder 40 move upwardly of the body 10 to any further extent, inasmuch as the stop sleeve 89 is engaging the lower end of the body. However, the hydrostatic head of fluid in the well casing can act downwardly on the upper piston 38... forcing the lower piston downwardly along the body 10 and within the lower setting sleeve 40.

Ex. 1004 6:1–11. Petitioner, however, also recognizes that the next sentence of Myers states that slips 30 are “prevented from moving downwardly.” Pet. Reply 6–7 (quoting Ex. 1004, 6:11–21). Petitioner attempts to reconcile any inconsistency in the disclosure of Myers with a statement that suggests that language not supporting its contention must be “read in its full and proper context.” Pet. Reply 7. Petitioner, however, fails to provide additional evidence, for example from expert testimony, to adequately explain the “full and proper context” of Myers, and instead relies only on attorney argument.⁷

Petitioner further speculates that for Patent Owner's “radial-only” movement of slips 30 of Myers to be correct, the relative rate of movement between Assembly A and Assembly B would have to be precisely

⁷ A supporting expert declaration is not, *per se*, a requirement of a reply. However, by relying only on attorney argument to further develop its contentions in its Reply, Petitioner has shielded its interpretation of the operation of Myers (an admittedly complicated reference) from potential examination by Patent Owner through, for example, additional deposition testimony. Thus, the Board is left with less evidence upon which to base its decision than it would likely have had if Petitioner's Reply contentions were supported by evidence in the form of, for example, declaration testimony from a competent witness. Ultimately, however, even Petitioner's attorney argument does not persuade us that Myers supports Petitioner's position for the reasons discussed.

controlled. Pet. Reply 7–8. There is insufficient evidence in the record to support by a preponderance the contention that slips 30 of Myers are precluded from moving only radially because of the precise level of control that would be required.

Petitioner also contends with regard to the movement of Assembly A that Mr. Underwood “recognized his mistake . . . which leads to the undeniable conclusion that slips 30 move axially.” Pet. Reply 12. We disagree. Mr. Underwood indicates that Assembly A is prevented from moving any further by stop ring 78, but also states “there is some clearance and some extra movement beyond the point at which the lock pin 61 is released,” such that prior to reaching the stopping point the “expander is free to move downwards, and this assembly is free to move further upwards.” Ex. 1021, 55:8–22. Petitioner has not shown that Mr. Underwood adopted Petitioner’s contention that Myers discloses axial translation of slips 30. As explained during oral argument by Patent Owner: “We would agree that at some point [A]ssembly A stops moving. The question is when does it stop moving and what has taken place before that.” Tr. 20:10–12. Patent Owner maintains that the simultaneous movement of Assemblies A and B results in radial movement of the slips. *Id.* at 20:12–14.

In sum, we agree with Petitioner that Myers is a complicated reference. We also agree with Petitioner that Myers “is evidence,” but Myers does not state expressly that slips 30 translate axially and Petitioner fails to provide persuasive evidence to support its interpretation of how Myers operates to translate slips 30 axially, relying largely on the speculative arguments of counsel. *See* Tr. 43:5–6. Petitioner’s reliance on the depicted angle of slip ring 35 having generally T-shaped slots 36 is

insufficient to demonstrate, by a preponderance of the evidence, that slips 30 move axially, when the figures are considered in light of Myers's operation as a whole. See Pet. 20–21. Moreover, Petitioner's effort to raise doubt over Patent Owner's interpretation of Myers' operation is not sufficient to demonstrate by a preponderance of the evidence that Myers discloses all elements of claim 1 of the '099 patent—this remains Petitioner's burden. The Petition, Mr. Shale's supporting declaration, Mr. Shale's deposition testimony, and all of the evidence of record, considered together, does not demonstrate by a preponderance of the evidence that Myers operates to translate slips 30 axially, as required by claim 1. As a result, we find that Petitioner has not shown by a preponderance of the evidence that Myers anticipates claim 1. For the same reasons, Petitioner has not shown by a preponderance of the evidence that Myers anticipates claims 7, 8, 18, 19, 31–37, and 39–42, which depend from claim 1.

C. ASSERTED OBVIOUSNESS OVER MYERS AND BOSTOCK

Petitioner contends claims 4, 33, and 34, each of which depends from claim 1, would have been obvious over Myers and Bostock. Pet. 24–26. According to Petitioner, “[e]ach of claims 4, 33, and 34 recites biasing either a sleeve or a movable arm to a collapsed position.” *Id.* at 24. Petitioner relies on Bostock as disclosing a spring for biasing. *Id.* As to the limitations of claim 1 from which claims 4, 33, and 34 depend, including the requirement of “*one moveable arm translates axially and radially,*” Petitioner relies only on the contentions it set forth under its anticipation analysis with respect to claim 1. Because Petitioner does not rely on Bostock to teach the recited feature “*one moveable arm translates axially and radially,*” does not argue the feature would have been obvious over the

combination, and, for the reasons provided above, has not shown by a preponderance of the evidence that Myers teaches the feature, Petitioner has not shown by a preponderance of the evidence that claims 4, 33, and 34 of the '099 patent would have been obvious over Myers and Bostock.

D. CONCLUSION

Claim 1 of the '099 patent, the only independent claim instituted in this proceeding, requires, in part, “*wherein the at least one moveable arm translates axially and radially.*” Petitioner has not demonstrated by a preponderance of the evidence that Myers discloses axial translation of at least one moveable arm, and, therefore, has not shown that Myers anticipates claim 1, or claims 7, 8, 18, 19, 31–37, and 39–42 which depend from claim 1.⁸ With respect to claims 4, 33, and 34, Petitioner has not demonstrated by a preponderance of the evidence that axial translation of at least one moveable arm would have been obvious over the combination of Myers and Bostock, and, therefore, has not shown that claims 4, 33, and 34 would have been obvious over the combination of Myers and Bostock.

⁸ During oral argument Petitioner asserted for the first time that we should not reach claims 18, 19, 36, and 40–42 in this proceeding, purportedly because under *In re Smith Int'l* issued by the Federal Circuit on September 26, 2017, “the law has changed” in some manner that affects Petitioner’s contentions. Tr. 6. Petitioner did not request an opportunity to brief the issue prior to the oral argument. *Id.* at 6–7. Petitioner concedes that any impact of *In re Smith Int'l* does not extend to its contentions with regard to claim 1 of the '099 patent. *Id.* at 5–6, 10. Because we find claims 18, 19, 36, and 40–42 have not been shown to be unpatentable for the same reasons as claim 1, from which they depend, Petitioner’s request that we not reach claims 18, 19, 36, and 40–42 is moot.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1, 2, 4–20, and 28–42 of U.S. Patent No. 7,314,099 C1 have not been shown by a preponderance of the evidence to be unpatentable; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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